

Reliance Communications Ltd. (RCom) Response to TRAI Consultation Paper on Allocation and Pricing of Microwave Access(MWA) and Microwave Backbone (MWB) RF carriers.

At the outset we welcome the opportunity provide for commenting on the issue w.r.t. the Allocation and pricing of MWA and MWB RF carriers.

Executive Summary:

1. Microwave spectrum should be used diligently so as to meet the future requirements of higher data usage and a spectrum Cap should apply to avoid any excess allocation to any set of TSPs.
2. **3-4 carriers may be allotted initially (including 1 carrier for MWB)** with the access spectrum to enable TSP to roll out its backbone network. Any allocation above the initial allocation should be based on justification of the additional carrier requirement and availability on the case to case basis.
3. **A cap of max. 6-8 MW carriers allotted (including 2 carriers for MWB) to a TSP irrespective of the technology used.** This will check the misuse/excess allotment of MW spectrum and will also lead to usage/laying of fibre backbone network where the demand is higher.
4. In case TSP needs additional carrier above the cap of 6-8 carriers, then the same should be allocated in the higher spectrum bands. **It is therefore suggested that possibility of use of E/V band should be explored to meet the increasing demand of backbone network.**
5. Microwave carriers for GSM and CDMA technologies should be allocated separately.
6. Spectrum being a scarce resource should be assigned judiciously with a viewpoint of future requirement and efficient utilization by the TSPs, thus there is no reason to allow unlimited access to any TSP. **We suggest that excess spectrum should be withdrawn immediately as per the criteria mentioned above.**
7. **MWA/MWB carriers should be assigned on exclusive basis with administrative allotment procedure.** Exclusive allotment is simpler, easy to implement and also gives flexibility to the operator to plan and manage its network.
8. **Under no circumstances,** the MW spectrum should be auctioned as has been done for the Mobile access spectrum.

9. **Upfront charge should not be levied on the assignment of MWA or MWB carriers, apart from the annual spectrum charges.** The Annual spectrum charges should be levied on AGR basis only.
10. The growth in demand of Mobile broadband coupled with 3G/4G enabled devices viz. smart phones, Tablet, PDA etc requires regular upgrade of radio networks to meet the increasing throughput requirement of the users. Therefore, to cater this increasing broadband/traffic surge of the telecom industry, there is a need to identify and make available additional MW spectrum i.e. 6-42 GHz.
11. E band and V band should be made available to TSP so as to cater the increasing demand of higher capacity fixed backhaul links. Light touch licensing and nominal spectrum charges of maximum ten thousand per link should be adopted at the earliest.
12. Broadband penetration is less today however with the proliferation of smart devices the same is going to change in future and MW will not be able to meet the backhaul capacity demand. Therefore, the aim of the government should be to encourage and incentivized operators to lay more and more OFC cable, so that they are ready to meet the enlarged broadband demand of future and customer can enjoy the lightning speed of internet services.

Our reply to the queries raised by TRAI is as under:

Q1. How many total Microwave Access and Backbone (MWA/MWB) carriers should be assigned to a TSP deploying:

- a. 2G technology only.
- b. 3G technology only.
- c. BWA technology only.
- d. Both 2G and 3G technologies.
- e. 2G and BWA technologies.
- f. 2G, 3G and BWA technologies.

Please give rationale & justification for your answer.

AND

Q2. How many MWA/MWB carriers need to be assigned to TSPs in case of 2G, 3G and BWA at the start of their services [i.e. at beginning of rolling of services] Please justify your answer.

AND

Q8. Considering the fact that different TSPs may require additional carriers at different point of time, what should be the assignment criteria for allocation of additional carriers for MWA and MWB?

AND

Q9. How can it be ensured that spectrum carriers assigned are used optimally and the TSPs are encouraged to move towards the OFC?

RCom Comments:

- Mobile broadband technologies have evolved along the roadmap from 2G to 3G HSPA , to HSPA+ and 4G LTE mobile broadband, in order to provide increased data capacity at a lower cost per bit. The higher data carrying capacity of access technologies can be effective in providing mobile broadband services to the customers only if these are complemented by an equally supportive and capable backhauls.
- The requirement of backhaul also depends upon the choice of the topology adopted, technology deployed, no. of OFC PoPs etc. Thus, the requirement of backhaul capacities would differ from 2G to 4G i.e 2-4 Mbps for 2G to approx. 120 Mbps per site for 4G technologies.
- With the increase in data penetration, smart phones and advent of 4G technology, the requirement of backhaul connectivity is increasing. This requires high capacity backbone network especially OFC or the higher capacity wireless/microwave backbone network. However, the availability of OFC network is not feasible in all terrains and is being coupled with high cost of laying, RoW charges etc. **It has been our experience that even in urban areas where OFC has been deployed extensively, we need to have MW links as backups to tide over the frequent frequency disruptions in OFC due to the cuts sustained during developmental works by various agencies like water dept., sewage etc.** Thus the microwave is playing a critical role in dimensioning the TSP network.
- **It is therefore important that the Microwave spectrum should be used diligently so as to meet the present/future requirements of higher data usage and some spectrum Cap should apply to avoid any excess allocation to any set of TSPs.**
- In view of the above, **we propose that 3-4 carriers (including 1 carrier for MWB) may be allotted initially** with the access spectrum to enable TSP to roll out its backbone network. Any allocation above the initial allocation should be based on justification (As mentioned in Nov'06 & various orders of DoT) of the additional carrier requirement and availability on the case to case basis.
- We also propose a **capping of max. 6-8 MW carriers (including 2 carriers for MWB) allotted to a TSP irrespective of the technologies used.** This will not only check the misuse/excess allotment of MW spectrum **but will also lead to usage/laying of fibre backbone network where the demand is higher.**

- In case TSP needs additional carrier above the cap of 6-8 carriers, then the same should be allocated in the higher spectrum bands. **It is therefore suggested that possibility of use of E/V band should be explored to meet the increasing demand of backbone network.**
- **However, since the CDMA & GSM networks of dual technology operators are altogether different and independent from each other having independent requirements, MW carriers should be allocated for both the networks separately.**

Q3. Should excess spectrum be withdrawn from existing TSPs?

AND

Q4. If yes, what should be the criteria for withdrawal of excess allocation of MWA and MWB carriers, if any, allocated to the existing service providers?

RCom Comments:

- Yes, excess spectrum should be withdrawn immediately as per the criteria mentioned earlier to our response to Q1&2.
- Spectrum being a scarce resource should be assigned judiciously with a viewpoint of future requirement and efficient utilization by the TSPs, thus there is no reason to allow unlimited access to any TSP.
- **TRAI may recommend timelines of max. 6 months for the surrender of excess frequencies by TSPs.**

Q5. What should be the preferred basis of assignment of MWA/MWB carriers to the TSPs i.e. 'exclusive basis assignment' or 'link-to-link based assignment'?

AND

Q6. In case 'exclusive basis' assignment is preferred, whether MWA and MWB carriers should be assigned administratively or through auction. Please comment with full justifications.

AND

Q7. In case 'link-to-link basis' assignment is preferred, how the carrier assignment for different links should be carried out, particularly in nearby locations?

RCom Comments:

- **MWA/MWB carriers should be assigned on exclusive basis with administrative allotment procedure.** Exclusive allotment is simpler, easy to implement and also gives flexibility to the operator to plan and manage its network. It not only helps TSP to use the MW spectrum without any interference but also reduce the WPC effort of coordination while allotting carriers on link to link basis.
- **Under no circumstances,** the MW spectrum should be auctioned as has been done for the Mobile access spectrum. While Microwave spectrum is used for the quick rollout, connectivity between the BTS and core network, redundancy and point to point connectivity for specific destinations; the mobile access spectrum is used for every where coverage in a service area. Thus, we disagree with any idea of auctioning the MW carriers which may impede the speed of roll out of network through these carriers.
- In light of the above, we submit that the MWA/MWB should be allocated on exclusive basis for the entire service area for which the service provider is paying SUC on AGR basis.

Q10. Should an upfront charge be levied on the assignment of MWA or MWB carriers, apart from the annual spectrum charges?

RCom Comments

- **No, upfront charge should not be levied on the assignment of MWA or MWB carriers, apart from the annual spectrum charges.**
- We believe that the existing charging mechanism on revenue share is working well from last many years and the same should be continued with.

Q11. What should be the pricing mechanism for MWA and MWB carriers? Should the annual spectrum charges be levied as a percentage of AGR or on link-by-link basis or a combination of the two?

RCom Comments

- The Annual spectrum charges should be levied on AGR basis only.
- Unlike MCW formula which is complex in nature and difficult to implement, the AGR based payment is simple and vary with the revenue growth of the service provider. Moreover MCW formulae is dependent on variable like distance of the link which are generally bone of contention between licensor and licensee and is subject to frequent litigations.

Q12. In case of percentage AGR based pricing, is there any need to change the existing slabs prescribed by the DoT in 2006 and 2008? Please justify your answer.

RCom Comments

- No, there is no need to change the existing slabs.
- Any increase in AGR based pricing will increase the regulatory cost burden on the financially beleaguered telecom industry and would also impact the network expansion plan of the TSPs.

Q13. In case link-by-link based charging mechanism is adopted then:

(a) Should the spectrum be priced differently for different MW spectrum bands (6GHz/7GHz/13GHz/15GHz/18GHz/21 GHz/26GHz/28GHz/32GHz/42 GHz etc)? If yes, by what formula should these be charged?

(b) What are the factors (viz as mentioned in para 3.22), that should appear in the formula? Please elaborate each and every factor suggested.

RCom Comments:

MWA/MWB should be allotted on exclusive basis. Please refer to our response to Q5.

Q14. Should the option of assignment of MWA carriers in all the spectrum bands in 6-42 GHz range be explored in line with other countries? What are the likely issues in its assignment MWA carriers in these additional spectrum bands?

RCom Comments:

- The mobile world is rapidly evolving with the proliferation of smart devices and applications. The growth in demand of Mobile broadband coupled with 3G/4G enabled devices viz. smart phones, Tablet, PDA etc requires regular upgrade of radio networks to meet the increasing throughput requirement of the users. Therefore, to cater this increasing broadband/traffic surge of the telecom industry, there is a need to identify and make available additional MW spectrum.
- In India today, the MWB and MWA spectrum is available in 6/7 GHz and 13/15/18/21 GHz respectively. **To meet the growing demand for high capacity fixed links spectrum should be made available in various sub 42 GHz band viz. 10.5/ 23/26/32/38/40 GHz. This will also be in line with US and Europe wherein the wireless backhaul spectrum in use are 10.5/13/15/18/23/26/32/38/40 GHz.**
- In light of the above, we request TRAI that the MWA carriers should also be made available in all spectrum bands i.e. 6-42 GHz.

Q15. In your opinion, what is the appropriate time for considering assignment of MWA carriers in higher frequency bands viz. E-band and V-band?

RCom Comments:

- At present, only 6 GHz, 7 GHz, 13 GHz, 15 GHz, 18 GHz and 21 GHz bands are used for fixed point to point MW communication purposes. The available carriers in these bands are exhausting with increasing demands. The channel/ RF carrier bandwidth of around 28 MHz is mostly used so far. The high speed data services will require big channel size backhaul spectrum i.e. 56/108 MHz to support BTS so as to accommodate higher bandwidths. LTE/ LTE advanced will lead to greater use of small cells leading to greater volume of traffic over the links. Thus, higher bands i.e E/V bands shall be very attractive for high capacity 3G/4G backhaul applications.
- Higher frequency bands wireless systems offers an excellent alternative for back hauling larger capacity links offering certain advantages as under:
 - Large quantum of spectrum i.e. around 8-10 GHz spectrum is available in each band which enables deployment of multi-gigabit wireless links.
 - Their unique propagation characteristics allow use of highly directional ‘pencil beams’ minimizing interference concerns.
 - Due to shorter link distances it affords highly efficient reuse of spectrum.
 - These are globally harmonized band ensuring economies of scale. Carrier class products are now available for multi gigabit per second transmission at distances of 1 to 2 km.
 - They can be used as Fiber Extension in Metropolitan Area Networks; where deploying high capacity fiber is not feasible.
 - Also suitable for providing redundancy for fiber links in Last Mile/ Metropolitan Area Networks.
- A proposal has already been submitted by AUSPI to WPC for opening of these bands for Point to point outdoor applications.
- With the advent of 4G technology and demand for higher backhaul capacity, we submit that these bands should be made available at the earliest.

Q16. Should E-band be fully regulated or there should be light touch regulations?

AND

Q17. What charging/pricing mechanism would be appropriate for these bands?

RCom Comments

There should be a light touch regulation for E band deployment and usage.

- According to ITU Radio Regulations, the 71-76 GHz and 81-86 GHz bands are available for fixed and mobile services. Many countries have opened this E-band for outdoor point-to-point communication. A “light licensing” approach has been adopted by regulators in many countries viz. USA, UK, Australia & Russia. Under the “light licensing” scheme, the spectrum charge reflects only the cost of administering the allocation process.
- While these higher frequency bands need to be explored for PTP outdoor applications, there are several challenges/constraints like competitive price for the equipment in these bands, economic viability etc. which needs to be addressed. The administrations/regulators must encourage the usage with favourable charging mechanism. The present charging mechanism of MW based on revenue share would not be suitable & commercially viable & would discourage the usage of these higher bandwidths.
- The equipment in higher frequency bands utilize RF carrier bandwidths of 250 MHz, 500 MHz or even 1 GHz for each carrier. In India, the present system of spectrum charging – both under revenue share as well as the formula basis – results in exorbitantly high spectrum charge for such RF carriers. Hence, the economic viability of using links in these higher frequency bands pose a challenge and, therefore, suitable charging methodology be worked out to encourage the utilization of these bands.
- Therefore, it is necessary that global best practices for the utilization of these bands – **light licensing and nominal/ token spectrum charges of maximum 10 thousand per link should be adopted at the earliest in line with the objective of NTP-2012 for making available affordable and effective communication for the citizens.** The use of these bands would lead to optimal utilization of spectrum, bring large socio-economic benefits besides and reasonable revenues from these unused bands.
- Further, in line with the international precedence, the allotment of these carriers (E/V band) should be done on link to link basis.

Q18. Apart from Q1-Q17, stakeholders are requested to bring out any other issue, which needs to be examined, with justification.

No comments.